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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/590,588	05/11/2007	Stefan Prebeck	ZAHFRI P886US	8495
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/590,588

Applicant(s)

PREBECK ET AL.

Examiner

EDWARD PIPALA

Art Unit

3663

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 August 2011.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) ☒ Claim(s) 6-25 is/are pending in the application.
- 5a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 6) ☐ Claim(s) ____ is/are allowed.
- 7) ☒ Claim(s) 6-25 is/are rejected.
- 8) ☐ Claim(s) ____ is/are objected to.
- 9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☒ The drawing(s) filed on 12 February 2010 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-608)
- Paper No(s)/Mail Date ____

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date ____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____

DETAILED ACTION

1. This Office action is in response to Applicant's amendments and remarks of 8/18/11.

The previous rejection of claims 6-24 under 35 U.S.C. 101 has been withdrawn.

Claims 6-25 are presently pending.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6-25 rejected under 35 U.S.C. 103(a) as being unpatentable over Hrazdera (US 6,942,595), in view of the AAPA as disclosed in Applicant's background of the invention section of the substitute specification paragraphs [0006-0009].

Applicant's first independent claim 6 presently recites:

A method of operating a drive motor driving both a tractor, via a tractor drive, and a trailer, via a traveling power takeoff shaft, the traveling power takeoff shaft having at least three discrete, shiftable power takeoff gear stages and the traveling power takeoff shaft being connected to the drive motor, the method comprising the steps of:

defining and providing to an electronic system for controlling the drive motor and the power takeoff gear stages higher and lower motor rotational speed threshold values for the drive motor;

determining by a speed sensor one of a wheel speed and a vehicle speed; and

by operation of the electronic control and responsive to one of the wheel speed and the vehicle speed,

controllingly conforming a rotational speed of the traveling power takeoff shaft to a ratio of at least one of the determined vehicle speed and the determined wheel speed, so that the tractor and the trailer travel at substantially a same speed;

comparing the determined one of the wheel speed and the vehicle speed to the defined higher and lower motor rotational speed threshold values; and

shifting a power takeoff stage to one of a corresponding next higher and the next lower discrete shiftable power takeoff stage, upon attainment of one of the higher and the lower motor rotational speed threshold value so as to maintain an optimal traveling speed for both the tractor and the trailer so that both the tractor and the trailer travel together substantially as integrated unit at substantially the same speed.

Applicant's independent claim 10 presently recites:

A method of operating a traveling power takeoff shaft connected by a clutch to a drive motor for driving a trailer and the drive motor also driving the tractor, the method comprising the steps of:

providing at least three discrete, shiftable power takeoff gear stages;

sensing a wheel rotational speed with a sensor;

defining and providing to an electronic system for controlling the drive motor and the power takeoff gear stages a lower motor rotational speed threshold value to correspond to a next lower power takeoff stage of the least three discrete, shiftable power takeoff stages; and

by operation of the electronic control and responsive to the wheel rotational speed,

comparing the wheel rotational speed to the lower motor rotational speed threshold value;

shifting to the next lower power takeoff stage when the rotational speed of the drive motor achieves the lower motor rotational speed threshold value; and

maintaining an optimal travel speed for both the tractor and the trailer, by shifting to a desired one of the least three discrete shiftable power takeoff stages, so that both the tractor and the trailer travel together with one another substantially as an integrated unit and at a substantially identical speed.

Applicant's independent claim 14 presently recites:

A method of operating a traveling power takeoff shaft that is connected to a drive motor and the traveling power takeoff shaft having at least three discrete, shiftable power takeoff shaft gear stages and the drive motor also driving rear wheels of a tractor, the method comprising the steps of:

monitoring at least one of a vehicle travel speed and a rear wheel rotational speed with a sensor; and

by operation of the electronic control and responsive to the at least one of a vehicle travel speed and a rear wheel rotational speed, adapting a rotational speed of the power takeoff shaft to conform to one of the vehicle travel speed and the rear wheel rotational speed, so that a towed trailer travels at substantially a same speed as a speed of the vehicle, by one of:

electronically shifting the traveling power takeoff shaft to a next higher takeoff shaft gear stage of the least three discrete, shiftable power takeoff stages, if a rotational speed of the drive motor essentially equals an upper rotational speed threshold;

electronically shifting the traveling power takeoff shaft to a next lower takeoff shaft gear stage of the least three discrete, shiftable power takeoff stages, if the rotational speed of the drive motor essentially equals a lower rotational speed threshold; and

adapting slip engagement of the clutch of the power takeoff shaft to match a difference between the rotational speed of the power takeoff shaft at a vehicle travel speed of zero and the lower rotational speed threshold of the drive motor to a predefined ratio.

Applicant's last independent claim 25 presently recites:

A method of operating a traveling power takeoff shaft that is connected to a drive motor and the traveling power takeoff shaft having at least three discrete, shiftable power takeoff shaft gear stages, including a low stage, an intermediate stage and a high stage, and the drive motor also driving rear wheels of a tractor, the method comprising the steps of:

monitoring at least one of a vehicle travel speed and a rear wheel rotational speed with a sensor; and

by operation of the electronic control and responsive to the at least one of a vehicle travel speed and a rear wheel rotational speed,

adapting a rotational speed of the power takeoff shaft to conform to one of the vehicle travel speed and the rear wheel rotational speed, so that a towed trailer travels at substantially a same speed as a speed of the vehicle, by one of:

electronically shifting the traveling power takeoff shaft to a next higher takeoff shaft gear stage of the least three discrete, shiftable power takeoff stages, if a rotational speed of the drive motor essentially equals an upper rotational speed threshold;

electronically shifting the traveling power takeoff shaft to a next lower takeoff shaft gear stage of the least three discrete, shiftable power takeoff stages, if the rotational speed of the drive motor essentially equals a lower rotational speed threshold;

adapting slip engagement of the clutch of the power takeoff shaft to match a difference between the rotational speed of the power takeoff shaft at a vehicle travel speed of zero and the lower rotational speed threshold of the drive motor to a predefined ratio; and,

compensating for a difference in the drive motor rotation speed between a zero

rotation speed and the lower motor rotation speed threshold value when, starting from the zero rotation speed, by allowing clutch slippage of the traveling power take off shaft.

With respect to at least independent claims 6, 10, 14 and 25 above, please note that the abstract of Hrazdera teaches an electronic control system for the drive of a power take-off mechanism on an agricultural tractor that records machine-specific values of the implement attached to the tractor, where the drive train between the tractor engine and the power take-off includes a CVT transmission, and column 4, lines 33-37 which further teach that it is possible to run the PTO with the CVT as a ground speed PTO in which its speed is directly aligned with the traveling speed of the agricultural vehicle, and that a conventional transmission may be used in place of the CVT (*which would then provide Applicant's recited speed stages and shifting from a higher to a lower, and vice versa*).

Hrazdera also teaches that the electronic control device is connected with a processor via a signal lead for receiving its output signals, and that the control device is connected for the formation of output signals via input leads, controls, sensors, and actuators for the tractor to read the machine specific parameters of the attached implement, for adjusting any of the motor speed, clutch slip and/or power takeoff stage (gear ratio of the transmission).

While it is noted that Hrazdera is primarily directed to the use of a CVT transmission, paragraphs [0006-0009] of Applicant's background of the invention appear to have already admitted that it is known in the art to make use of a power takeoff drive with a trucking vehicle, clutch and at least two driving gears, so that optimal drive is maintained for both the tractor and the trailer to travel together as a substantially integrated unit and at substantially the same speed.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have implement the teachings of Applicant's admitted prior art relating

to the use of a clutch and two speed ratios in conjunction with a power takeoff drive of a trailer, within the context of Hrazdera, since Hrazdera already discloses detection of operating parameters and control of a power takeoff speed ratio with respect to traveling speed of a vehicle, especially since Applicant's background of the invention acknowledges that it is known in the art that the speed vehicle and wheels of the take-off may need to be optimized and that this would have taken little additional experimentation by one in the art of agricultural vehicles and power takeoff devices with a substantial expectation of success.

Applicant's dependent claims 7-9 further recite compensating for starting from a stop (zero speed) through the use of clutch slippage, through either electronic or manual control, whereas Hrazdera already teaches the use of an electronic control system for a power take-off which includes a CVT transmission, and where it is notoriously old in the art to manually perform clutch slippage when engaging a motor of a vehicle from a stop.

As noted above independent claims 10, 14 and 25 essentially recite a method similar to that of independent claim 6 with the additional recitations of "electronically matching" and "electronically shifting", where as noted above it would have been obvious to one of ordinary skill in the art of electronic controls for agricultural vehicle having traveling power take-offs to adjust the speed of the take-off with respect to motor speed and vehicle traveling speed.

Dependent claims 11-13 are essentially similar to claims 7-9, as discussed above.

Dependent claims 15-20 additionally reciting specific RPM values for each of the low stage, intermediate stage, and a high stage, please again see the rejection above.

Dependent claims 21-24 further recite a power take off to wheel speed ratio of approximately 40-1, operating the power take off shaft at speeds of between 2.5 to 10 km/h, obtaining different ratios between the rotational speeds of the wheels and the traveling power takeoff shaft, and optimally adjusting slip of a clutch between the power takeoff shaft and the drive motor with respect to one of vehicle speed and wheel speed, whereas it would have been obvious to one of ordinary skill in the art at the time the invention was made since these values are within the normal operational values conventionally associated with such vehicles and where optimizing clutch slip is also a conventional use of a clutch in such an embodiment.

With respect to new independent claim 25, relating to a method of operating a traveling power takeoff connected to a drive motor essentially as recited by previous independent claims 6, 10 and 14, and further compensating for a difference in drive motor rotation speed between zero and a lower motor rotation speed threshold, please again see the above grounds of with respect to the independent as well as dependent claims.

Response to Arguments

3. Applicant's amendments and considerable remarks of 8/18/11 have been fully considered but they are not seen to be persuasive for the reasons given above in the grounds of rejection of claims 6-25 as indicated above.

Applicant begins by suggesting that Hrazdera ('595) does not teach, suggest disclose or hint at any form of system for comparing wheel rotational speed of a trailer or tractor to a lower motor rotational speed threshold value of the tractor vehicle and subsequently shifting a power takeoff gear stage so that the tractor and trailer travel at substantially the same speed.

Applicant argues that Hrazdera ('595) only teaches the use of a CVT and that the use of a clutch is omissible, no longer necessary and a compromise to the control system of Hrazdera ('595). However, the simple fact that Hrazdera ('595) even suggests that a clutch may not be necessary still acknowledges the possible or potential use of a clutch with respect to the power takeoff.

While it has been acknowledged above that Hrazdera does primarily disclose the use of a variable ratio transmission in the form of a CVT, Applicant's background of the invention portion of the specification paragraphs [0006-0009] seem to disclose that traveling power takeoffs are known in the art, along with the desirability of maintaining the speed of the tractor and trailer substantially the same or in the same ratio of one with respect to the other. In that paragraph [0007] of AAPA the position that it would have been obvious to one of ordinary skill in the art to either control the CVT of Hrazdera in a stepped manner so as to exhibit low, intermediate and a high stage with respective shaft speed values, or alternatively to actually substitute a stepped type of transmission (having three stages) and a clutch, particularly in view of Applicant's background of the invention indicating that the use of a two gear ratio transmission and clutch are already known in the art at the time the invention was made. Furthermore, and particularly since EP 0 511 480 B1 even seems to acknowledge the use of a power takeoff for a farm tractor with at least two free gears, then it would seem that one of ordinary skill in the art at the time the invention was made would have readily recognized the need to have the wheels of the tractor and trailer to come into contact with the surface being traveled over at substantially the same speed, by or through the use of a stepped set of transmission ratios for a shaft of a power takeoff which drives an attached trailer.

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to EDWARD PIPALA whose telephone number is (571)272-1360. The examiner can normally be reached on M-F 9:30 - 6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on 571-272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Edward Pipala/
Examiner, Art Unit 3663